Spectral UV measurements within the EUropean BREWer NETwork

COST Action ES1207 (2013-2017)

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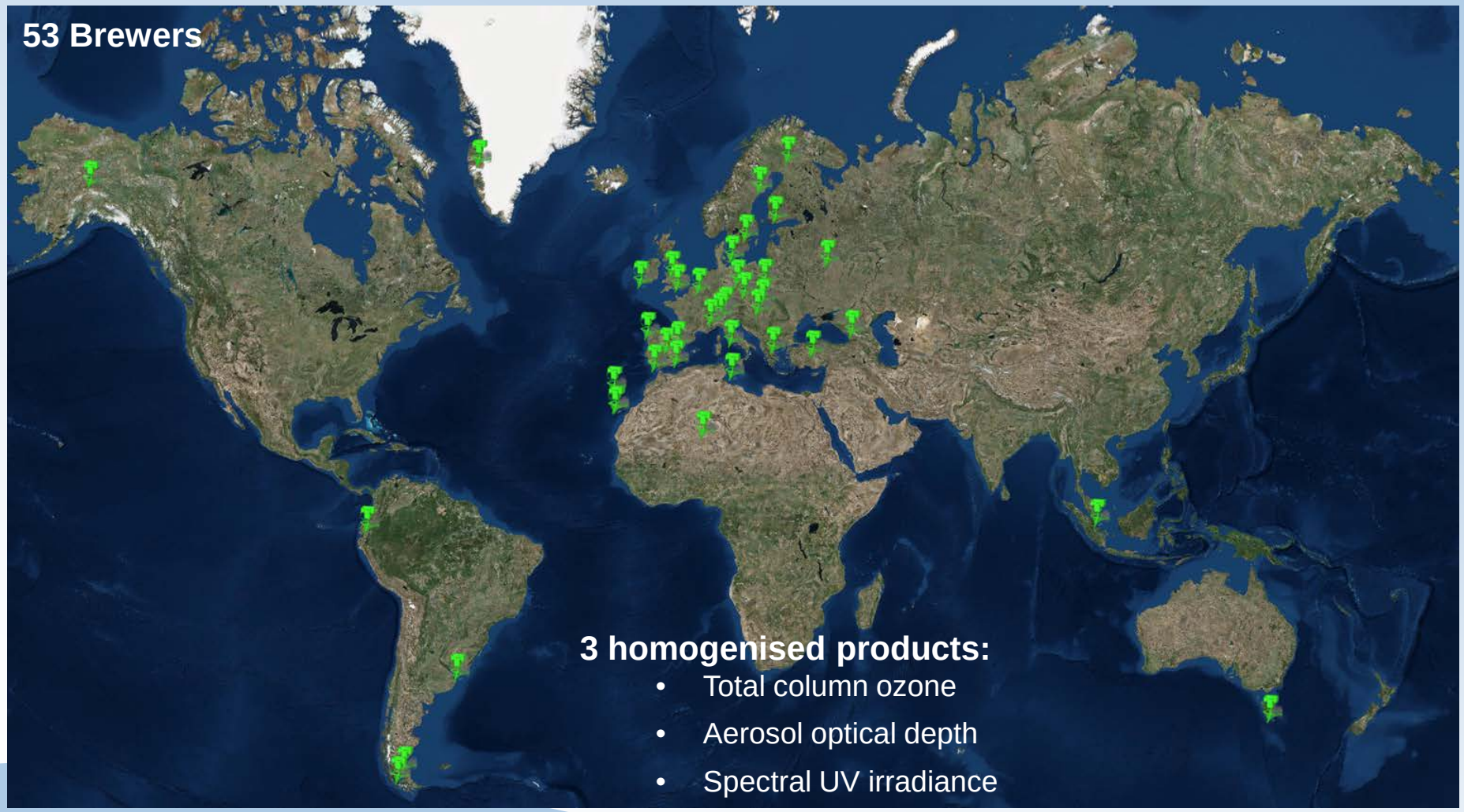
pmod wrc

EUBREWNET



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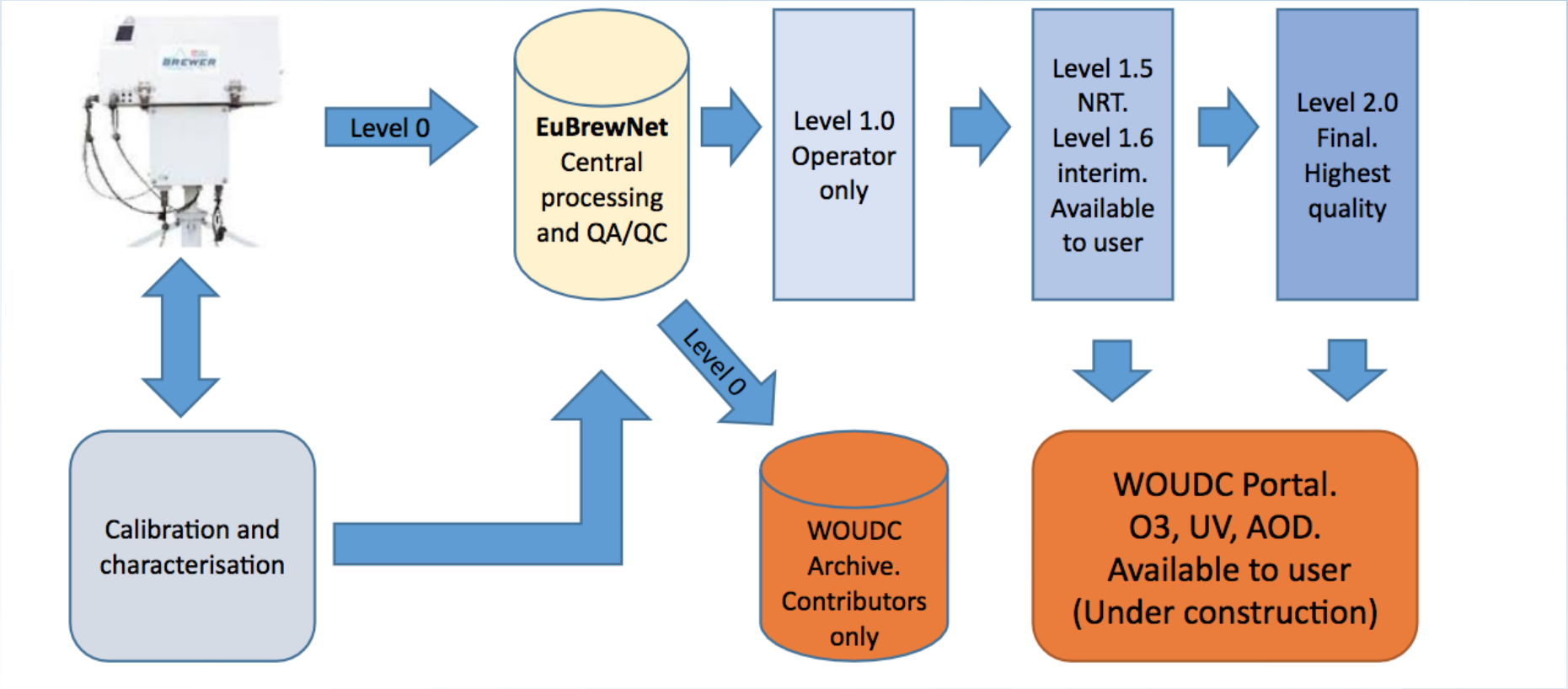
Data Processing



Spectral UV measurements

Aim: Homogenised spectral UV measurements

To achieve this:

- Data processing using common processing tools.
- Bi-annual campaigns at El Arenosillo, Spain organised by the Regional Brewer Calibration Center – Europe (RBCCE)
  - Instrument characterisations
  - Common calibrations using transfer standards traceable to the WCC-UV.
  - Quality assurance by the portable reference spectroradiometer QASUME.

Goal: 5% expanded uncertainty, 95% coverage probability

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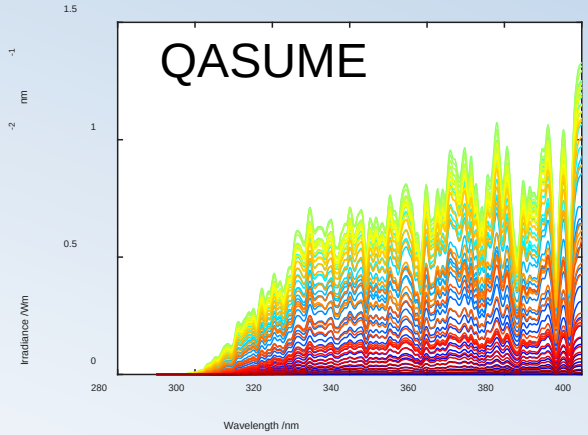
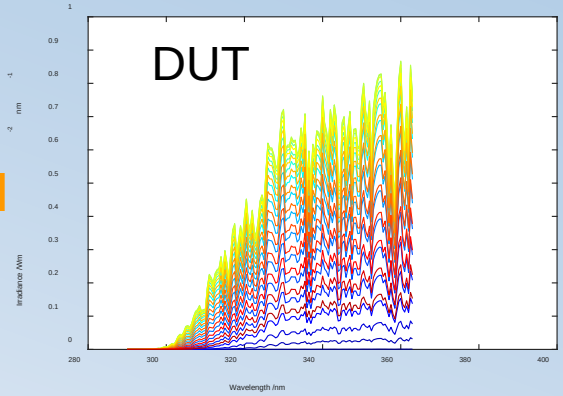
Comparison of solar spectra



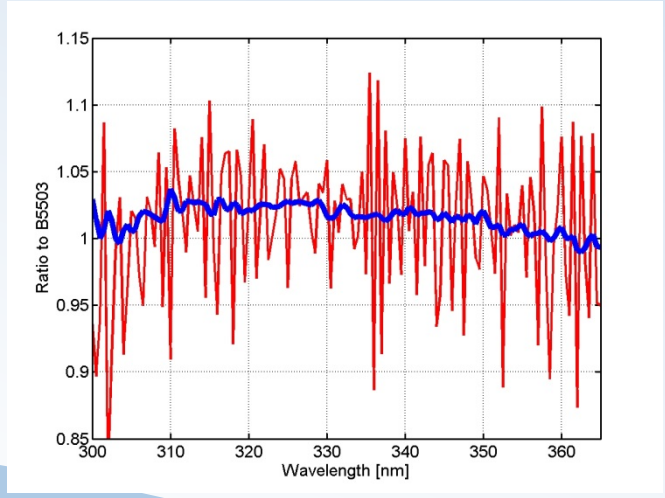
Convolution & high resolution ETS

matSHIC



$$R(\lambda) = \frac{DUT(\lambda)}{QASUME(\lambda)}$$

Ratio DUT/QASUME



- Same wavelength scale
- Uniform slit width (1 nm default)

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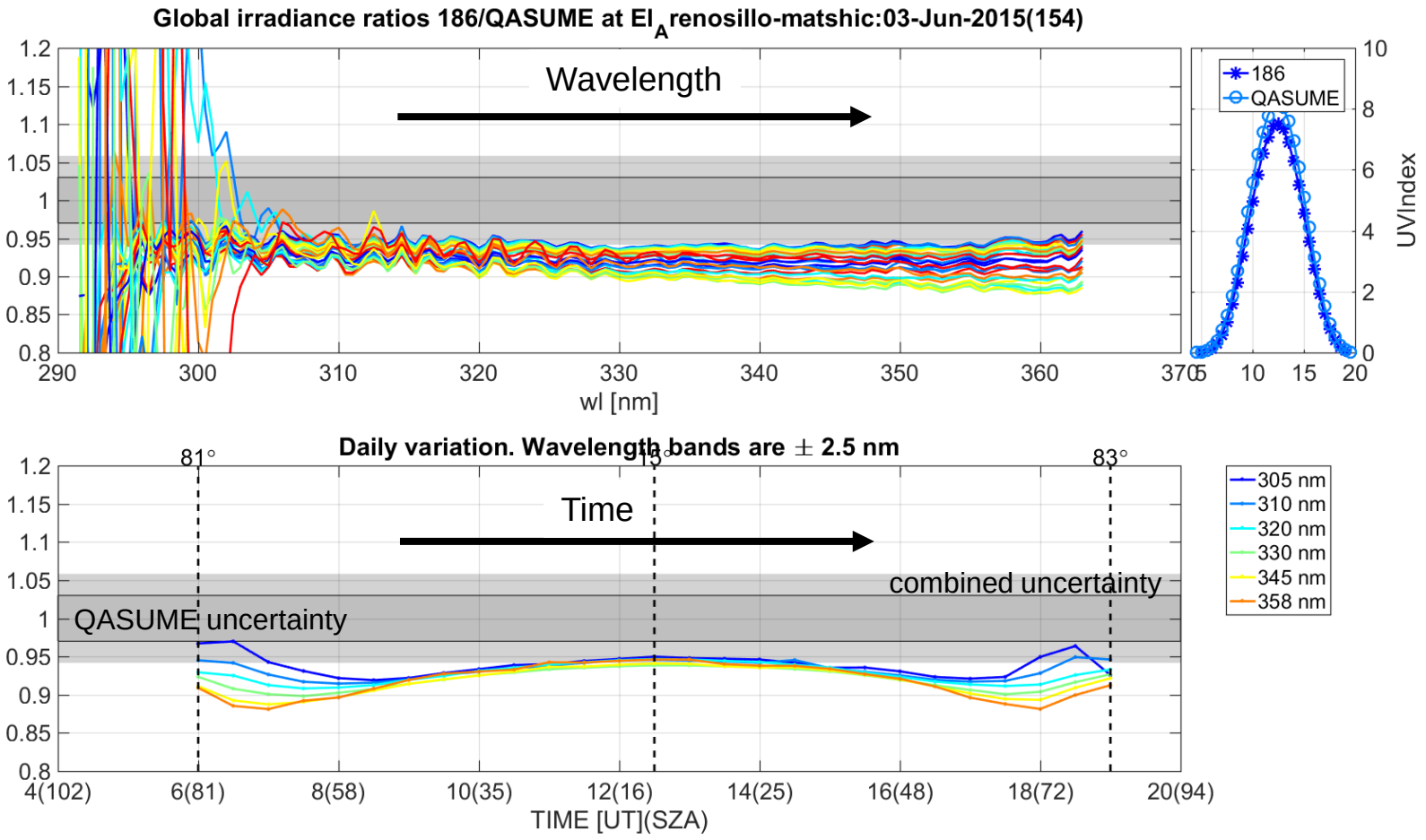
Spectral comparison between local Instrument and QASUME Spectroradiometer



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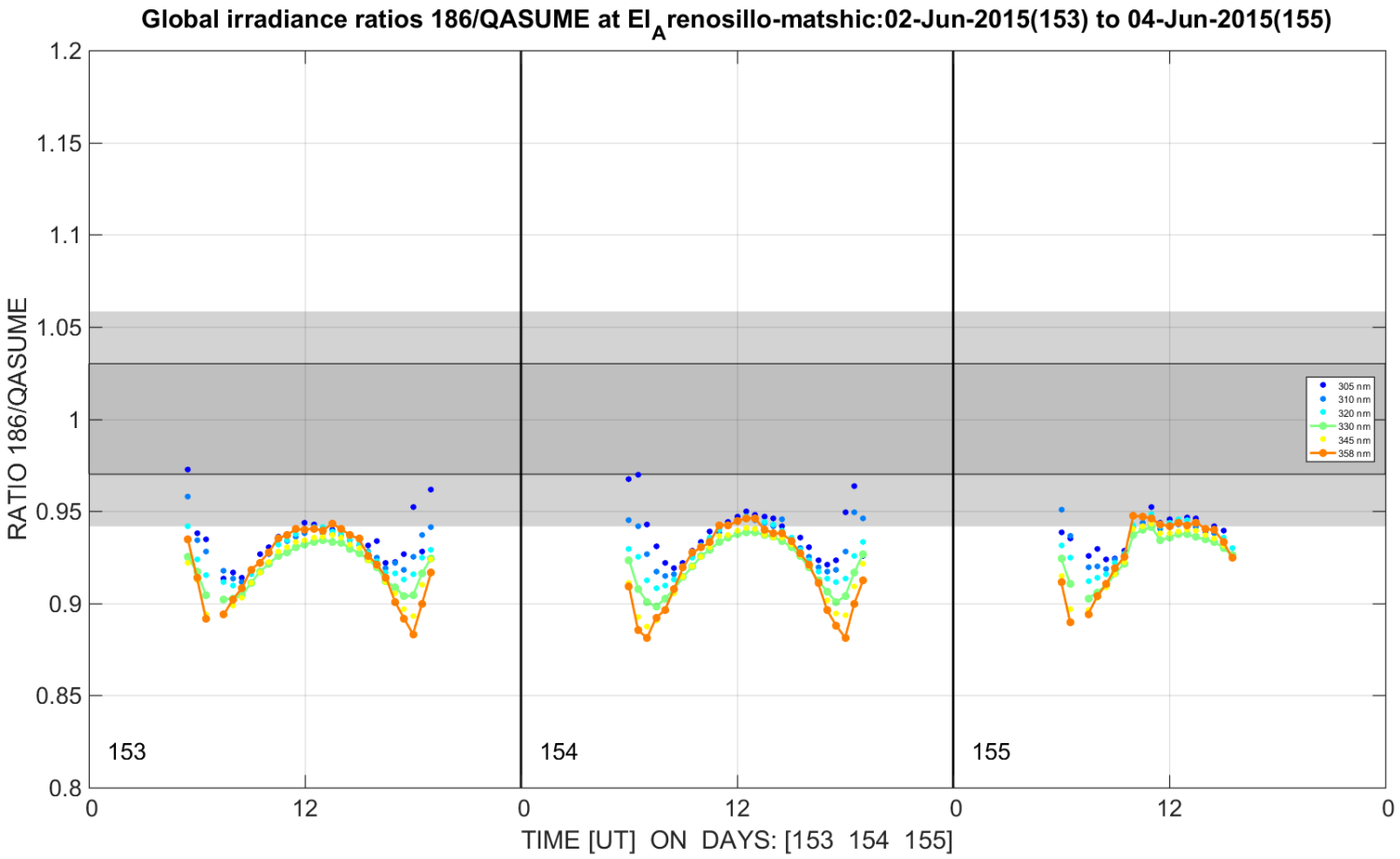

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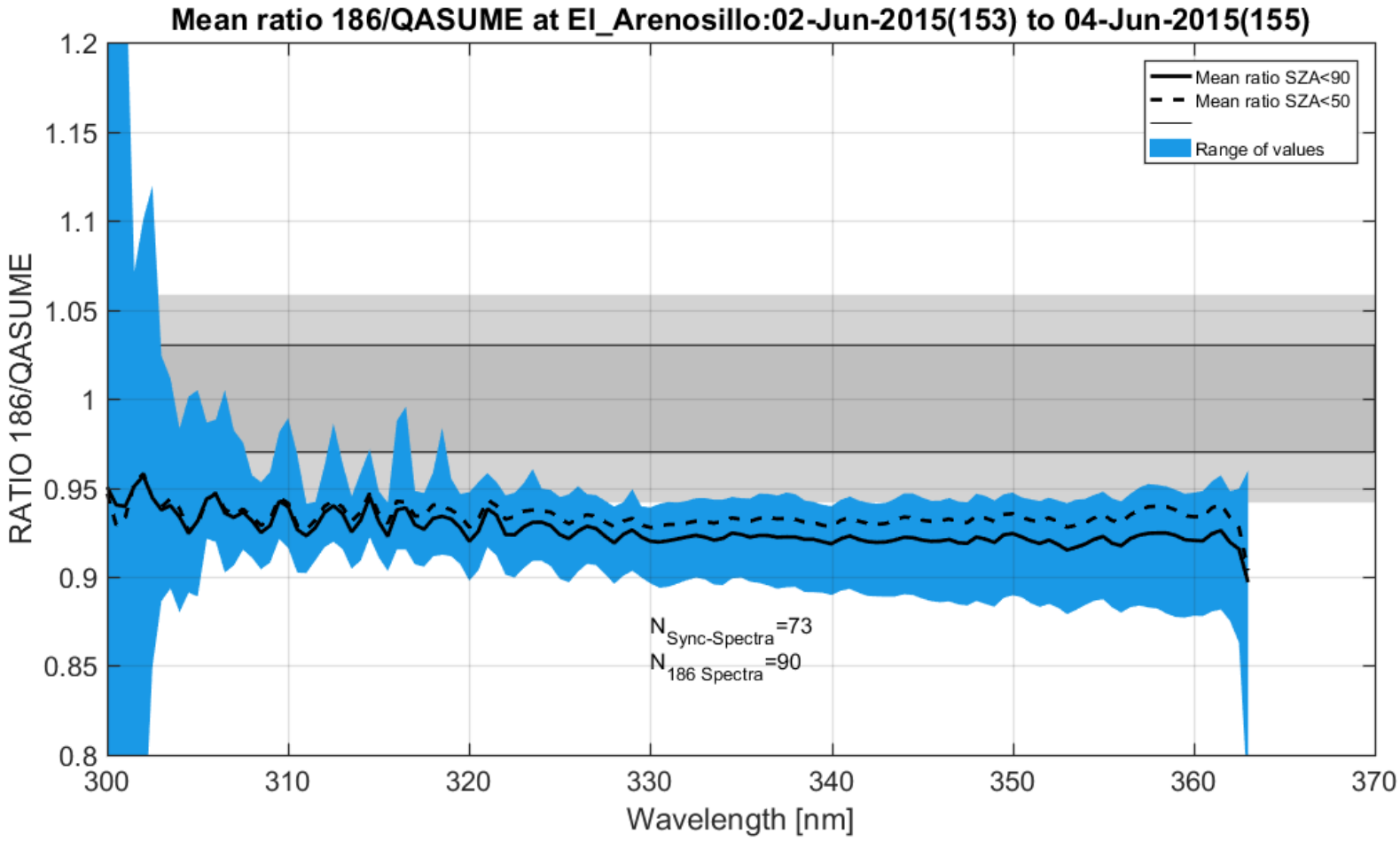

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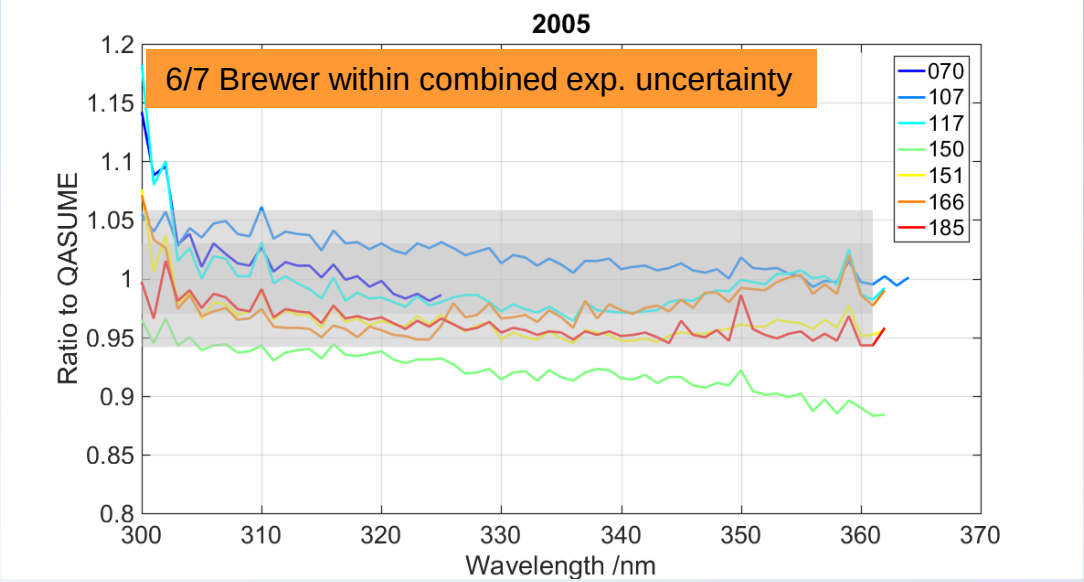
Results from RBCC-E 2005 - 2017



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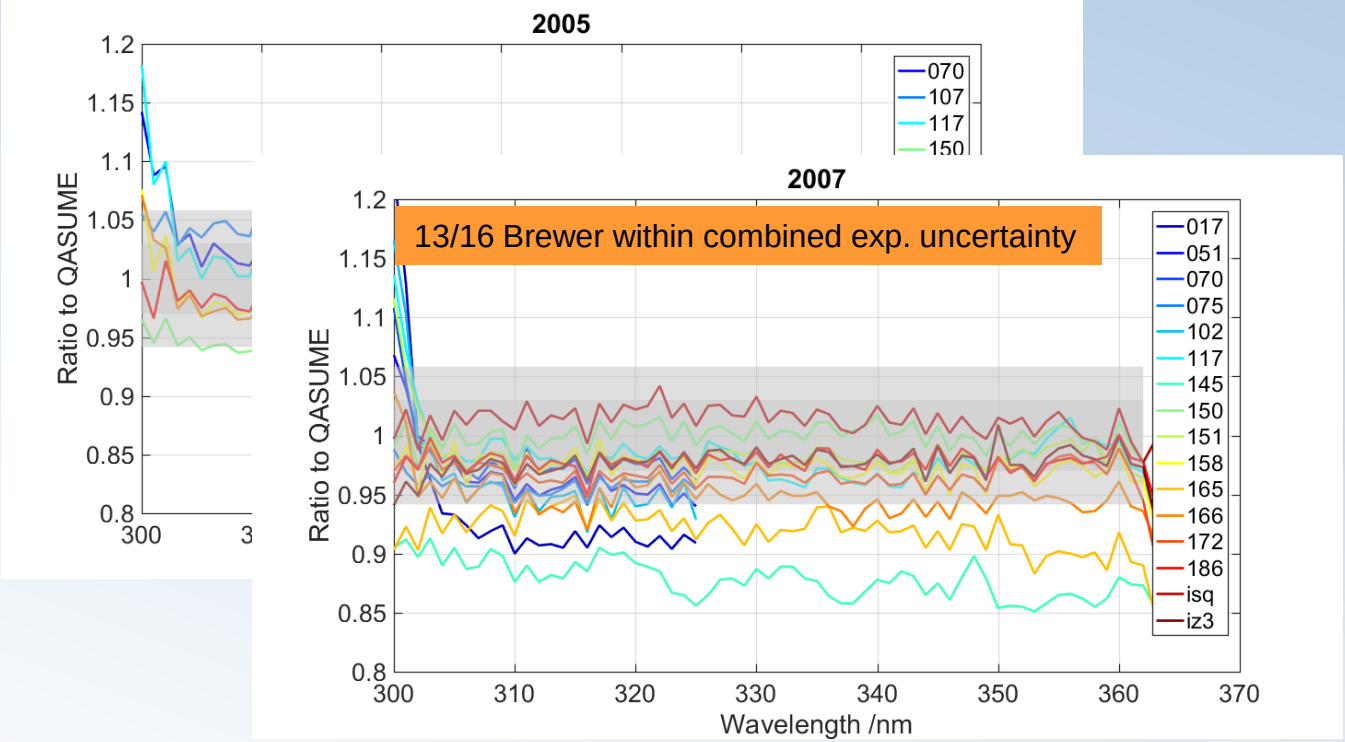
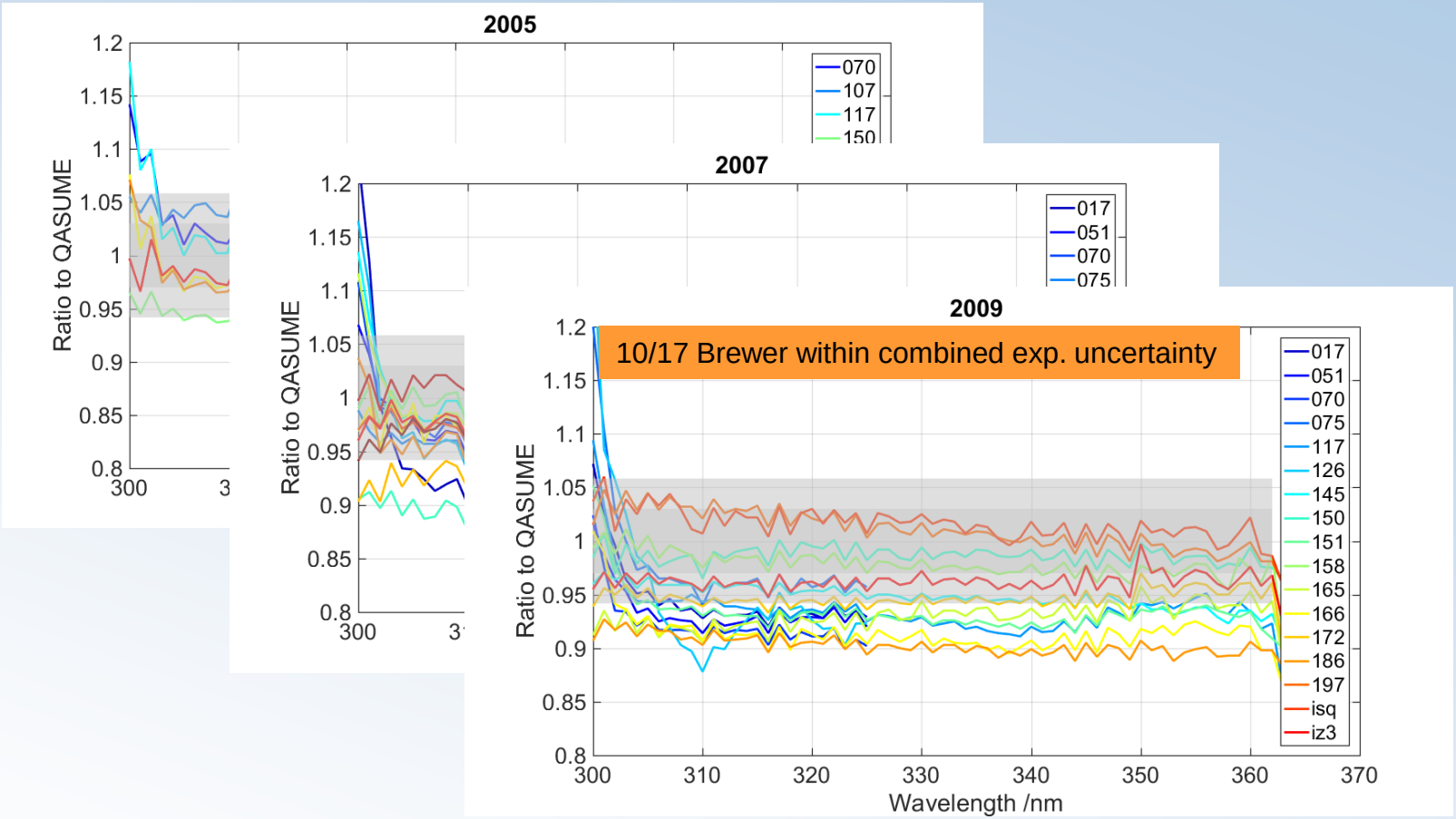
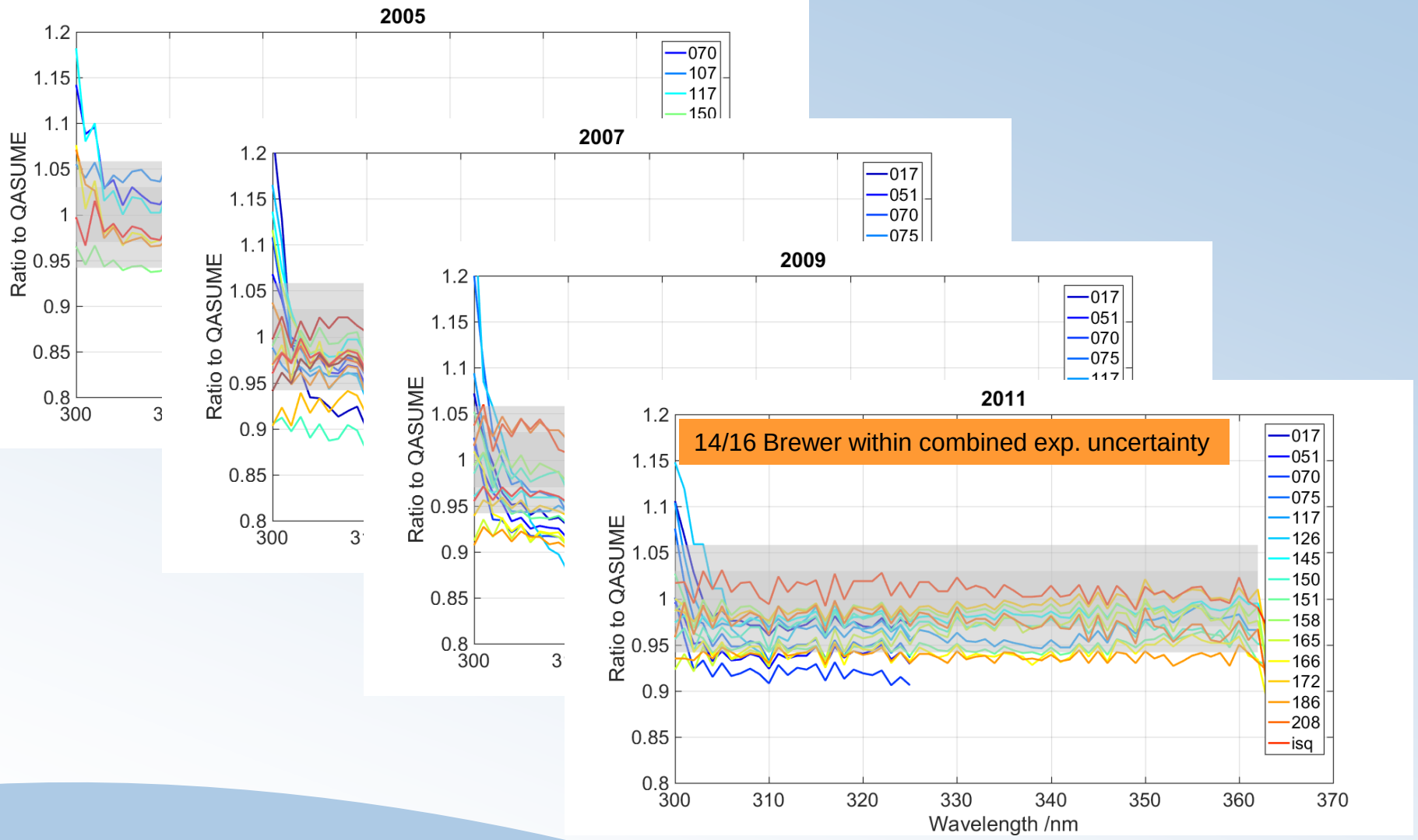


Results from RBCC-E 2005 - 2017



Results from RBCC-E 2005 - 2017



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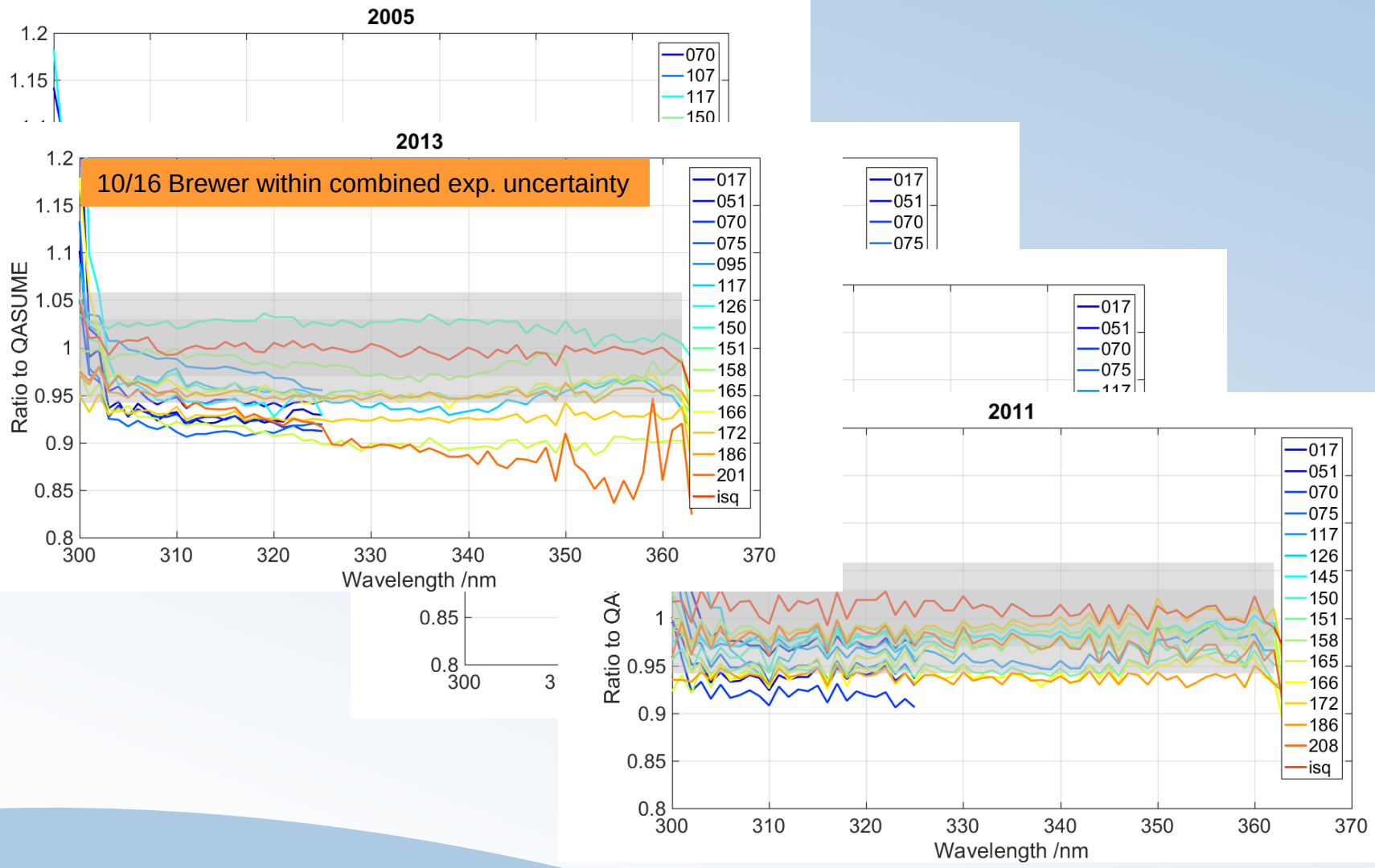


RBCC-E 2015

26 May to 4 June 2015
21 Brewer

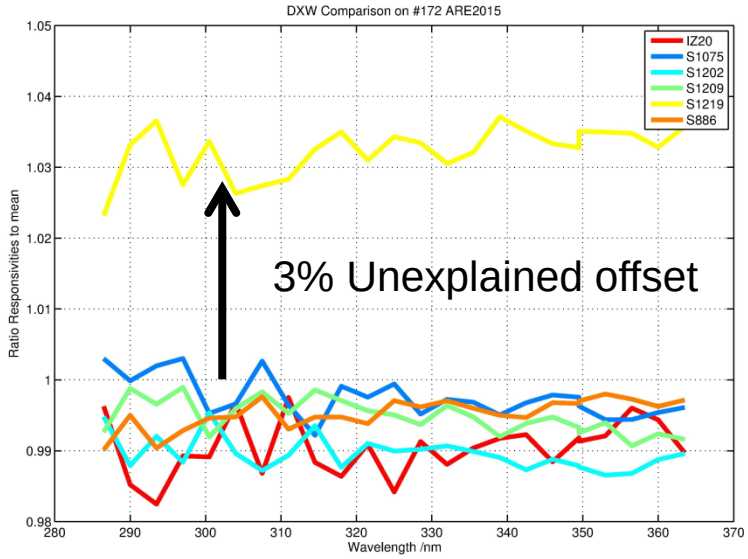
- **Total ozone column**
- **Aerosol optical depth**
- **Spectral UV**

Activities during RBCCE 2015
1000 W Calibrations

SETUP A

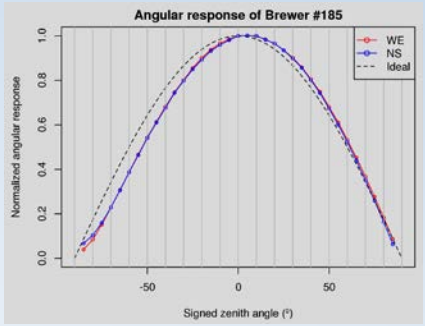
SETUP B

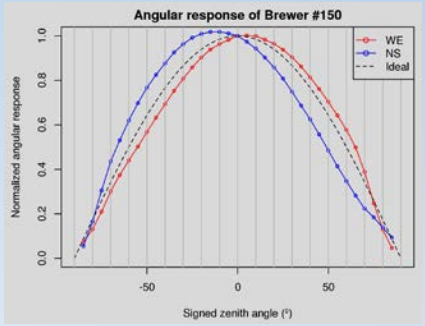
Traceability to SI

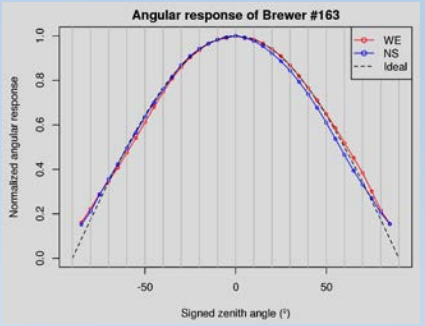


Activities during RBCCE 2015

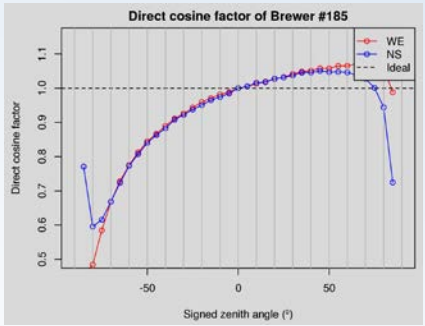
Angular response function using the BAT



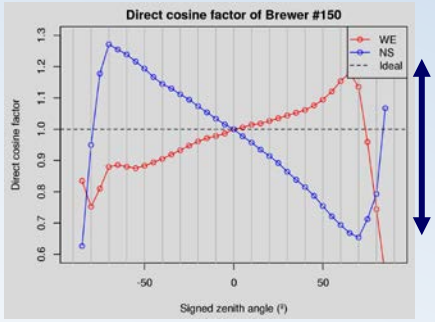




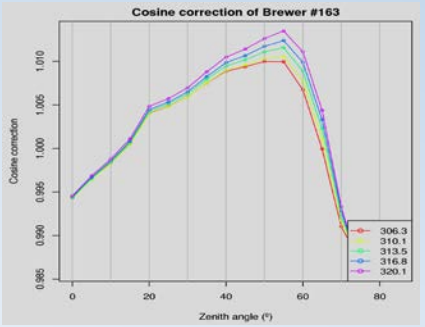
Cosine error



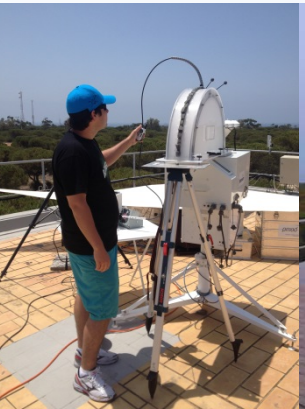
±25%



±25%



±1%



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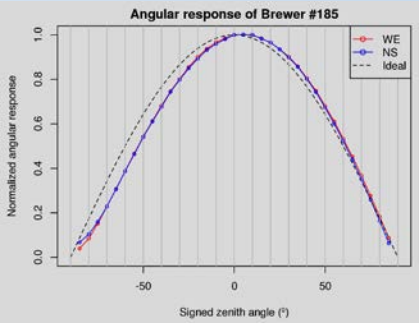

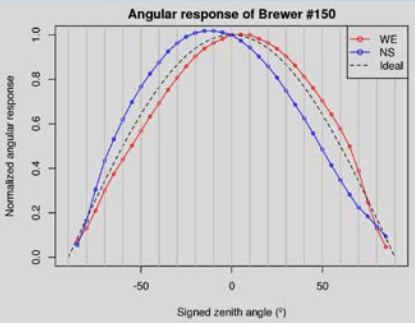

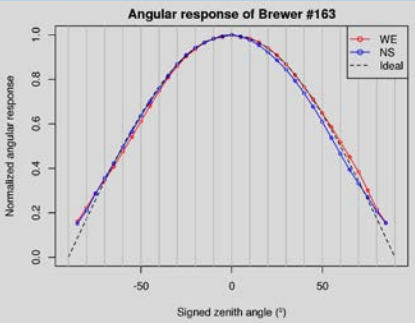

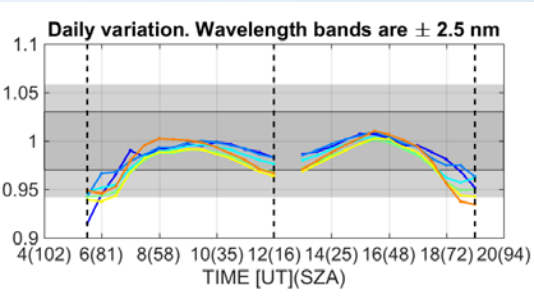

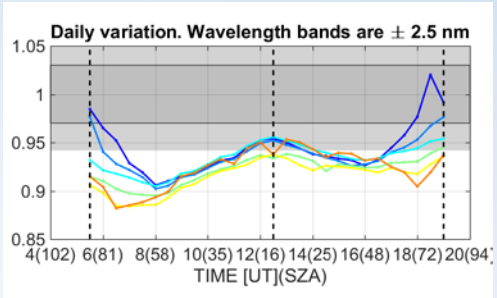

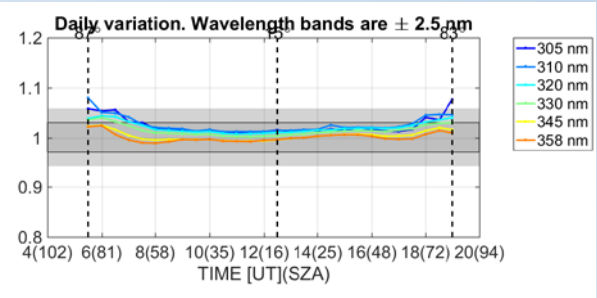

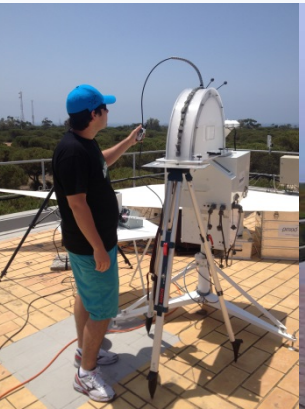

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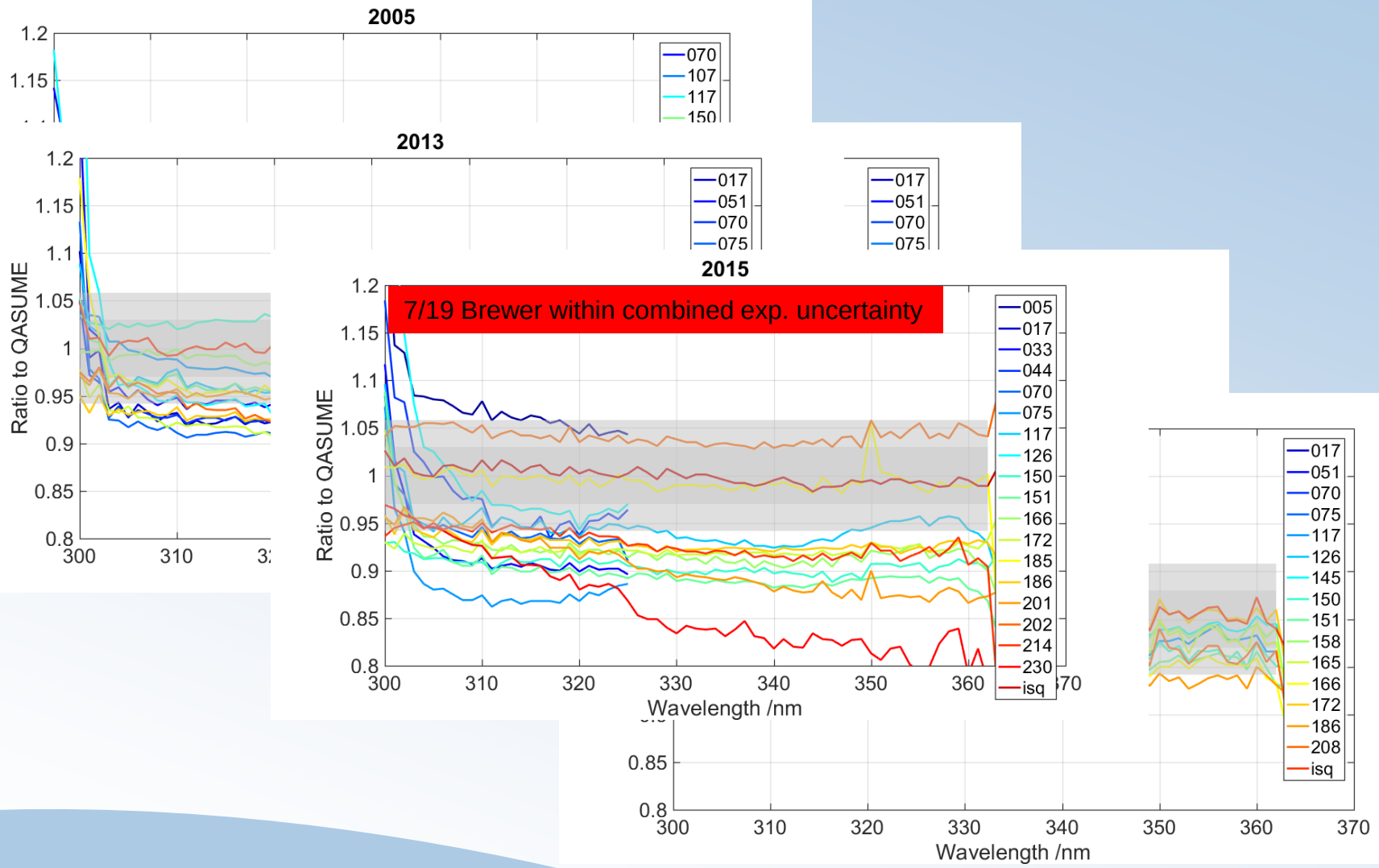


pmod wrc

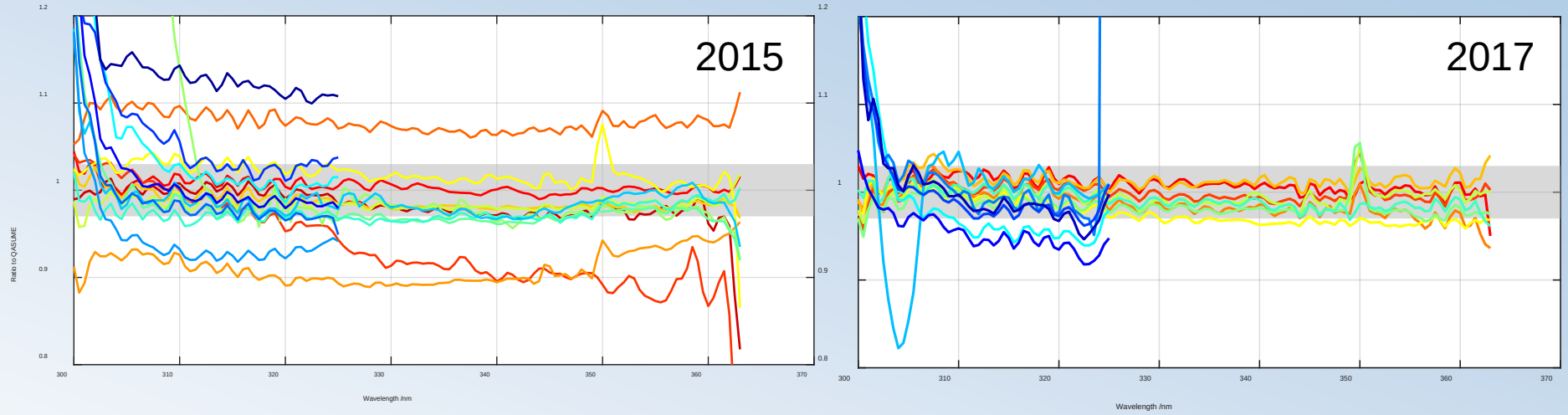
RBCC-E 2017

- Global entrance optics aligned and characterised with the BAT
- Cosine correction applied (Lakkala et al., 2018)
- Common 1000 W lamp calibration

- Todo
- Brewer temperature correction

pmod wrc

Spectroradiometer Comparisons



Conclusions

- Even turn-key instruments like the Brewer spectrophotometer can be easily mistuned.
- Regular intercomparisons are indispensable for Quality Assurance and operator training.
- COST ES1207 - EUBREWNET has initiated a path towards a homogeneous network of spectral UV measurements in Europe.